

**REMARKS**

Claims 1-48 are pending in the application. Of the claims, Claims 1, 35, 42, and 45-48 are independent claims. Claims are rejected under 35 U.S.C. 102(e) as being deemed anticipated by Yourlo (U.S. Patent No. 6,201,176). Claims are rejected under 35 U.S.C. 103(a) as being deemed unpatentable over Yourlo in view of Hoory et al. (U.S. Patent No. 6,678,655), Walker et al. (U.S. 6,710,822) and Bloom et al. (U.S. Patent No. 4,591,928.) Those rejections are respectfully traversed and reconsideration is requested.

**Regarding Rejections under 35 U.S.C. 102(e)**

Claims 1-2, 6, 16, 29-32, 35-36 and 39-48 are rejected under 35 U.S.C. 102(e) as being anticipated by Yourlo.

Before discussing the cited references however, a brief review of the Applicant's disclosure may be helpful. The Applicants disclosed invention is directed to a method and system for determining similarity between a plurality of musical works. For each musical work, (i) forming a spectral signature based on spectral features and (ii) a rhythmic beat representation for each musical work. For a given musical work of interest: (a) comparing its spectral representation to the spectral representations of the musical works in the plurality; (b) comparing its rhythmic beat representation to the rhythmic beat representations of the musical works in the plurality; and (c) sums, including respective weighting of results of the comparison in (a) and (b), the summed results providing an indication of which musical works in the plurality are similar to the given musical work of interest.

Turning to the cited prior art, Yourlo discusses a method for identifying and retrieving particular pieces of music or attributes of a desired piece of music from a music database on the basis of a query composed of desired features and conditional statements. Pieces of music are classified based on extracted features (properties) of the piece of music and stored in a database for future retrieval. The result of a query outputs the piece of music and/or the music identifiers associated with the desired piece of music.

Yourlo does not teach or suggest at least the Applicants' claimed "forming (i) a spectral signature based on spectral features from the corresponding audio file" as recited in base claim 1.

Yourlo merely extracts features (properties) from the audio such as, tempo, loudness, pitch, timbre (sharpness and percussivity). (*See Fig. 15, step 1502 (feature retrieval).*) The extraction of features of the audio does not teach or suggest forming a spectral signature based on spectral features from the audio. (*See Applicants' specification Page 9, line 4 - Page 11, line 13.*)

Therefore, Yourlo does not teach or suggest "for a given musical work of interest: (a) comparing its spectral representation to the spectral representations of the musical works in the plurality" as claimed in base claim 1. Yourlo merely describes the use of spectral components to extract the percussivity property. (*See col. 2, lines 29-43.*) Furthermore, Yourlo does not teach or suggest the claim element of "summing including respective weighting of results of the comparisons in (a) and (b), said summed results providing an indication of which musical works in the plurality are similar to the given musical work of interest." Yourlo merely discusses using the extracted features of the audio to provide an indication of similarity. (*See col. 12, line 44 – col. 13, line 37; Figs. 18-21.*)

Claims 2, 6, 16, 29, and 30-32 are dependent on Claim 1. Accordingly, these claims should be found in allowable condition for the same reasons as claim 1 above, as well as on the basis of additional limitations in these claims.

Yourlo's discussion of segmenting a piece of music into a plurality of windows does not teach or suggest "performing a windowing function on each frame" as claimed by the Applicants in claim 6. The Applicants disclosed "windowing function" is performed on each frame that results from dividing the audio file. (*See Applicants' specification Page 10, lines 3-6.*)

Yourlo's discussion of a similarity comparison process that searches a database for matches for a music query does not teach or suggest the Applicants' claimed "generating a set of similar musical works" as claimed by the Applicants in claim 29. In contrast to Yourlo's processes that searches for matches, the Applicants' system generates a set of similar musical works for the given musical work of interest. (*See Applicants' Specification Page 14, lines 9-26.*)

Yourlo's discussion of graphs illustrating features for different music does not teach or suggest "visually displaying on a display device, the musical works in a manner illustrating relative similarities or dissimilarities of the musical works" as claimed by the Applicants in amended claim 30. In contrast to the extracted features of music displayed by Yourlo, the

Applicants illustrate similarities of the musical works. (*See* Applicants' specification Fig. 6 and Page 18, lines 17-22.) Yourlo merely discusses selecting music based on results of comparison of extracted features. (*See* Col. 12, lines 44-50.) There is no discussion of how the results of the comparison would be visually displayed on a display device.

Yourlo's discussion of manual categorization of music based subjective content of songs does not teach or suggest "constructing a matrix of song similarity based on the relative distance" as claimed by the Applicants in claim 32.

Independent Claims 35 and 42 recite a like distinction in terms of an method, independent claims 46-48 recites a like distinction in terms of an apparatus, independent claim and thus similarly patentably distinguish over the prior art. Likewise Claims 36 and 39-41 depend from Claim 35 and follow the foregoing arguments. Claims 43-44 depend on Claim 42 and follow the above arguments regarding base Claim 42.

As such the § 102(e) rejection of Claims 1-2, 6, 16, 29-32, 35-36 and 39-48 is believed to be overcome.

#### Regarding Rejections under 35 U.S.C. 103(a)

Claims 3-5, 7-13 and 17-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yourlo in view of Hoory et al. (U.S. Patent No. 6,678,655.) Claims 14-15, and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yourlo in view of Hoory as applied<sup>1</sup> to claims 3-5, 7-13, and 17-28 above, and further in view of Walker et al. (U.S. Patent No. 6,710,822.) Claims 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yourlo in view of Bloom et al. (U.S. Patent No. 4,591,928.)

Cited prior art, Hoory discusses a digitized speech signal encoder for compressing a digitized speech signal. (*See* Abstract.)

Cited prior art, Walker discusses an image processing apparatus for measuring similarities between different video data (including image and voice data).

Cited prior art, Bloom is directed to a post-synchronizing technique, that is, replacing dialog in a movie soundtrack that is recorded live at the time of shooting the movie with dialog recorded later in a studio.

To establish a *prima facie* case for obviousness under 35 U.S.C. § 103(a), (1) there must be some suggestion or motivation to combine reference teachings. (2) There must be a reasonable expectation of success. (3) The references when combined must teach or suggest all the claim limitations. For the reasons discussed below, it is respectfully submitted that the Office has not established a *prima facie* case under 35 U.S.C. § 103(a) for Claims 3-5, 7-13 and 17-28, and that therefore, Claims 3-5, 7-13 and 17-28 are allowable.

Dependent claims 3-5, 7-13, and 17-32 are directly or indirectly dependent on Claim 1 and thus are novel over the cited prior art for the same reasons already discussed for independent Claim 1.

Furthermore, dependent claims 3-5, 7-13, and 17-32 recite further limitations that are neither taught nor suggested by the cited prior art. For example, Yourlo's discussion of a distance metric does not teach or suggest "computing a similarity matrix for the audio file" as claimed by the Applicants in claim 19. In contrast, Yourlo discusses computing a distance metric between two different pieces of music. (*See* Yourlo col. 4, lines 6-7; col. 12, lines 11-16.)

Claims 14-15 and 33-34 depend from Claim 1 and follow the above arguments regarding base Claim 1.

Claims 37 and 38 depend from Claim 35 and follow the above arguments regarding base Claim 35.

Furthermore, Yourdo is directed to a system for querying a music database, Hoory is directed to a system for compressing a digitized speech signal, Walker is directed to image processing and Bloom is directed to a post-synchronizing technique. One skilled in the art of music databases would not look to compression of digitized speech signals, image processing or a post-synchronizing technique to determine similarity between a plurality of musical works as now claimed. Thus, there is no suggestion to combine Yamada, Beshai, Walker and Bloom. Even if combined, the present invention does not result as argued above.

Therefore, separately or in combination, Yourlo, Hoory, Walker and Bloom do not teach or suggest the Applicants' claimed invention. Thus, none of the cited prior art alone or in combination makes obvious the Applicants' claimed method for determining similarity between a plurality of musical works.

As such the § 103(a) rejections of Claims 3-5, 7-15 and 17-28, 33-34 and 37-38 are believed to be overcome.

Accordingly, the present invention as now claimed is not believed to be anticipated or made obvious from the cited art or any of the prior art. Removal of the rejections under 35 U.S.C. 102(e) and 35 U.S.C. 103(a) and acceptance of Claims 1-48 is respectfully requested.

### CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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